Honeywell

ADEMCO VISTA-128FBP/VISTA-250FBP
Home/Facility Automation Setup Guide

The ADEMCO VISTA-128FBP/VISTA-250FBP control panels, well known for providing industry-leading security, also supports Home/Facility Automation. Dealers and integrators can interface the ADEMCO VISTA-128FBP/VISTA-250FBP control panels with 3rd party Home/Facility Automation company hardware and software. This offers the end-user a complete turnkey solution that combines security with lighting and output control.

The ADEMCO VISTA-128FBP/VISTA-250FBP control panels easily interfaces with Home/Facility Automation hardware via the ADEMCO VA8201 Alpha Pager Module/RS232 I/O port or the ADEMCO 4100SM Serial Interface Module. The control panels' versatile protocol allows the end-users to do everything they could do at the system's keypad via a PC or 3rd party automation controllers. For example, arm and disarm of all 8 partitions, zone bypass of either 128 or 250 zones, control all 96 outputs, and view system status real time.

Today, the ADEMCO VISTA-128FBP/VISTA-250FBP control panels, with Rev 2.0 or higher, are compatible with Crestron and AMX Home/Facility Automation hardware and software systems.

Equipment Required

The following equipment is required to interface with Home/Facility Automation software:

- 1 ADEMCO VISTA-128FBP or 1 ADEMCO VISTA-250FBP Control Panel
- 1 ADEMCO VA8201 Module or ADEMCO 4100SM (both include one 4142TR Trigger Cable)

Connections for Home/Facility Automation Control

The following diagrams show the connections needed to interface the Control Panel and the ADEMCO VA8201 or ADEMCO 4100SM with 3rd party Home/Facility Automation hardware. Please see the important notes following the diagrams.

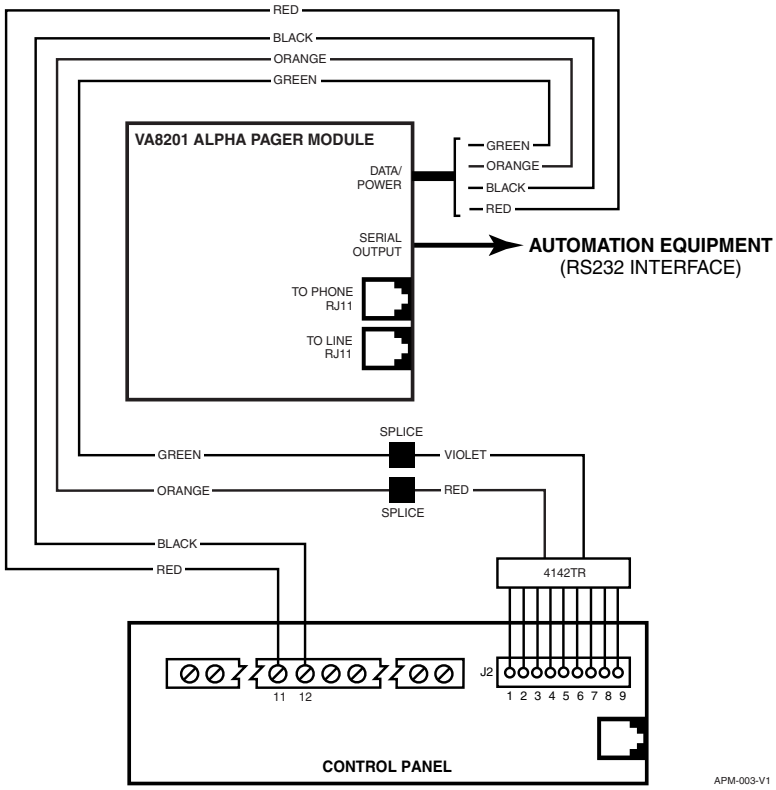

Figure 1: Wiring the ADEMCO VA8201 for Home/Facility Automation Control

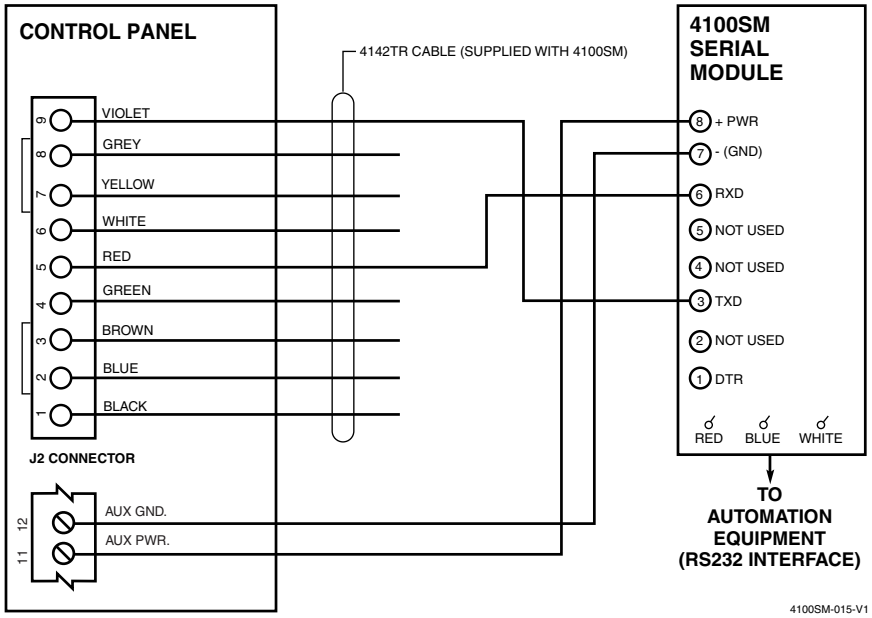

Figure 2: Wiring the 4100SM for Home/Facility Automation Control

Important Notes:

- For information regarding Crestron equipment and software required for interfacing to the control panel, contact Crestron at 1-888-CRESTRON (273-7876).
- For information regarding AMX equipment and software required for interfacing to the control panel, contact their support services.
- The outputs of the ADEMCO VA8201 Module and the ADEMCO 4100SM are serial (RS232) outputs.
- The distance between the ADEMCO VA8201 or the ADEMCO 4100SM and the Control Panel **cannot** be further than the length of the 4142TR Trigger Cable.
- The distance between the ADEMCO VA8201 or the ADEMCO 4100SM and the 3rd party Home/Facility Automation hardware can be up to 50'. If shielded wire, wire in conduit, or Cat 5 unshielded is used, the maximum distance is 25'.

Programming the Control Panel for Home/Facility Automation Control

For detailed information concerning the control panel's programming procedures, refer to the control panel's Programming Guide.

Programming for the ADEMCO VA8201

✳05 Enter 1 to view all zone faults/restores; enter 0 to view only events enabled in field **1✳79**

✳14 Enter 1 for Home/Facility Automation Control (cannot use both a serial printer and Home/Facility Automation)

1✳78 Extended Home Control Event Reports (**1**=extended; **0**=limited)

1✳79 Home Control Event Report Types (**1**=enable; **0**=disable)

2✳30 Enter 1 to enable the VA8201

3✳19 Enter 1 for Home/Facility Automation Control

NOTE: Fields ✳14, 2✳30 and 3✳19 MUST be set for Home/Facility Automation Control.

Programming for the ADEMCO 4100SM

✳05 Enter 1 to view all zone faults/restores; enter 0 to view only events enabled in field **1✳70**

✳14 Enter 1 for Home/Facility Automation Control (cannot use both serial printer and Home/Facility Automation)

1✳78 Extended Home Control Event Reports (**1**=extended; **0**=limited)

1✳79 Home Control Event Report Types (**1**=enable; **0**=disable)

2✳30 Must be set with a 0

3✳19 Enter 1 for Home/Facility Automation Control

NOTE: Fields ✳14, and 3✳19 MUST be set for Home/Facility Automation Control.

Protocol for Home/Facility Automation Control

The following tables describe the message packet formats for Arm/Disarm, Zone Status, Output Control, and System Event Notification messages between the control panel and the Home/Facility Automation software.

Message Packet Format Components

The table below describes the different components of a Message Packet format. A typical message packet format contains the following components: **NNMSD…00 CC (CR-LF)**

NOTES: Messages contain printable ASCII characters with the exception of the Terminator (CR-LF).
All hex values are entered in upper case only.

Message Packet Components

Component	Symbol	Character Length	Definition
Packet Length	**NN**	2	Indicates the total length of packet including all characters minus terminator. Legal values are hex 00-FF. Permissible characters are ASCII 0-9 and upper case A-F.
Message/Packet Type	**M**	1	Upper and lower case alpha characters a-z and A-Z. The commands are case-sensitive and must be entered with the case shown.
Sub-Message/ Packet Type	**S**	1	Upper and lower case alpha characters a-z and A-Z. The commands are case-sensitive and must be entered with the case shown.
Data	**D…**	0 or more	ASCII characters of data associated with the command/ packet type. Any printable ASCII character is permitted.
Reserved	**00**	2	Two ASCII characters reserved for future development. Only current legal character is numeric "0".
Checksum	**CC**	2	The hexadecimal 2's complement of the modulo-256 sum of the ASCII values of all characters in the message excluding the checksum itself and terminator. Permissible characters are 0-9 and upper case A-F.
Terminator	**(CR-LF)**		Message Terminator. ASCII characters consisting of hexadecimal 0x0D and 0x0A.

ARM and DISARM Messages

The PC can be used to ARM and DISARM a control panel partition, or query the panel's arming status. An ARM DISARM message packet format contains the following components: **16AMNNUUUUPPPPPPPP00CC (CR-LF).**

ARM/DISARM Message Packet Components

Symbol	Component	Definition
16	**Packet Length**	Indicates the total length of packet minus terminator.
AM	**Arming Mode**	Indicates the arming mode. **AA = Arm Away; AH = Arm Home (Stay); AI = Arm Instant; AM = Arm maximum; FA = Force Arm Away; FH = Force Arm Home (Stay); AD = Disarm.**
NN	**User Number**	The user number is not needed. Any 2-digit number may be used to fill this location.
UUUU	**User Code**	4-digit user code.
PPPPPPPP	**8 Partitions**	The partitions to which the command should be applied. The partitions may be in any order.
00; CC; (CR-LF)	**Reserved; Checksum; Terminator**	See Message Packet Format Components

The table below shows an example of each type of arm and disarm command as well as the query commands for the panel's arming status and the query command to receive back the panel's status report.

Examples of ARM/DISARM, Status Query, and Panel Status Report Messages

Action	String	Example
Arm Away	16AA011234012458000096(CR-LF)	Arm Away partitions 1,2,3,4, and 8 with user code 1234.
Arm Home (Stay)	16AH01123401245800008F(CR-LF)	Arm Stay partitions 1,2,3,4, and 8 with user code 1234.
Arm Instant	16AI01123401245800008E(CR-LF)	Arm Instant partitions 1,2,3,4, and 8 with user code 1234.
Arm Maximum	16AM1123401245800008A(CR-LF)	Arm Maximum partitions 1,2,3,4, and 8 with user code 1234.
Disarm	16AD011234012458000093(CR-LF)	Disarm partitions 1,2,3,4, and 8 with user code 1234.
Force Arm Away	16FA01123401245800091(CR-LF)	Force Arm Away partitions 1,2,3,4, and 8 with user code 1234.
Force Arm Home (Stay)	16FH01123401245800007F(CR-LF)	Force Arm Stay partitions 1,2,3,4, and 8 with user code 1234.
Arming Status Request	08AS0064 (CR-LF)	Arming Status Request: 08AS0064 (CR-LF)
Arming Status Report	10ASHHHHDDAA0081 (CR-LF)	Partitions 1-4 Armed Home, partitions 5 and 6 not assigned to the user, and partitions 7-8 Armed Away: If partitioning is not used or not available, all partition fields will contain the same value. If a partition is not assigned to a user it displays **"D"**. **Available Status Values are: A = Armed Away; H = Armed Home; D = Disarmed; N = Not Ready.**

Zone Status Messages

The table below describes the typical commands used to query the control panel for a Zone Status and the zone's partition. **NOTE:** The system provides the status for zones in blocks of 64 zones in each report.

Zone Status Request and Report Messages

Action	String	Definition
Zone Partition Request	08ZP0004E (CR-LF)	The control panel responds with a Zone Partition Report. ***Note*:** This message should be sent only when an initial connection is made with the panel. It is not intended to be used as a "polling" command.
Zone Partition Report	49ZPMD…00CC (CR-LF)	The panel sends this message in response to a Zone Partition Request. The data portion of this message is 65 characters long, (one character for each zone in order) with the first character indicating which group of zones is being sent. For example, message 1 contains the status for zones 1-64, message 2 the status for zones 65-128, etc. Zones 251-256 display 0. The value will be from 0-8, with 0 meaning no partition assignment. ***Example*:** a Zone Partition Report for a system in which Zone 1 is assigned to Partition 2. Zone 2 is assigned to no partition, and Zone 3 is assigned to Partition 8, would begin 49ZP1208…

Zone Status Request and Report Messages (continued)

Action	String	Definition
Zone Status Request	08zs004B (CR-LF)	The panel responds with a Zone Status Report. ***Note*:** This message should be sent only when an initial connection is made with the panel. It is not intended for use as a 'polling' command. The panel can be programmed to send System Notification Messages concerning zone status.
Zone Status Report	49ZSD…00CC (CR-LF)	The panel sends this message in response to a Zone Status Request. The data portion of this message is 65 characters long with the first character indicating which block is being sent: 1, 2, 3 or 4. Message 1 pertains to zones 1-64, message 2 to zones 65-128, message 3 to zones 129-192, message 4 to zones 193 to 250 with zeroes inserted for zones above 250. The data portion of the message is 64 characters long, one character for each zone in order. Each character is the *sum* of all applicable status values, expressed in hexadecimal using ASCII characters 0-9 and A-F. **Available Status Values are: 0 = Ready; 1 = Faulted; 2 = Trouble; 4 = Alarm; 8 = Bypassed.** ***Example*:** a Zone Status Report for a system in which Zone 1 is Faulted, Zone 2 is Faulted, in Trouble, and Bypassed, and the rest Ready, would begin 49ZS1B00…
Zone Descriptor Request	08ZD00__ (CR-LF)	The control panel responds with a Zone Descriptor Report. ***Note*:** This message should be sent only when an initial connection is made with the panel. It is not intended to be used as a "polling" command.
Zone Descriptor Report	##ZDZZZ…00CC (CR-LF)	The panel sends this message in response to a Zone Descriptor Request. The data portion of the message consists of the Zone Number (ZZZ), followed by a quote (ASCII 0x22), followed by the characters in the Zone Descriptor, and followed by another quote (ASCII 0x22). Because the length of the Zone Descriptor is varies, the Packet Length (##) is indeterminate. One descriptor is sent per message, with multiple packets sent until all descriptors have been transmitted. No message is sent for zones that do not have a descriptor. After the last zone descriptor is sent an "end of descriptors" message will be sent: 0DZD000""00CC(CR-LF)

Output Control Messages

The table below describes the typical commands used to turn on and off output devices (Relays, X-10) connected to the control panel and the status query and subsequent report message from the panel.

Control Panel Output Commands and Status Report Messages

Action	String	Definition
Output Status Request	0ACS00CC (CR-LF)	The control panel will respond to this request with a Control Panel Output Status Report for all 96 outputs. ***Note*:** This message should be sent only when an initial connection is made with the panel. It is not intended to be used as a "polling" command.

Control Panel Output Commands and Status Report Messages (continued)

Action	String	Definition
Output Status Report	68CSDDD….. (CR-LF)	The control panel sends this message in response to an Output Status Request. The data portion of this message (D) is 96 characters long, one character for each control output in order. The value will be U (UNPROGRAMMED), 0 (OFF), or 1 (ON). ***Example*:** With control output 1 OFF, output 2 ON, output 3 UNPROGRAMMED, and output 4 OFF, the message would begin 68CS01U0….
Output ON	0ACNDD00CC (CR-LF)	This is the command message to turn on a control output. **DD = Control Output Number (01, 02, etc.)**
Output OFF	0ACFDD00CC (CR-LF)	This is the command message to turn off a control output. **DD = Control Output Number (01, 02, etc.)**
Output Pulse	0ACPDD00CC (CR-LF)	This is the command message to pulse a control output (1-second on, 1-second off). **DD = Control Output Number (01, 02, etc.)**
Output Pulse for XX Minutes	0ACXDD00CC (CR-LF)	This is the command message to pulse a control output (on and off continuously for the time programmed in field 1∗74 of the control panel. **DD = Control Output Number (01, 02, etc.)**
Output Pulse for YY Seconds	0ACYDD00CC (CR-LF)	This is the command message to pulse a control output (on and off continuously for the time programmed in field 1∗75 of the control panel. **DD = Control Output Number (01, 02, etc.)**
Output Group On	0ABNDD00CC (CR-LF)	This is the command message to turn on a control output group. **DD = Control Output Group Number (01, 02, etc.)**
Output Group Off	0ABFDD00CC (CR-LF)	This is the command message to turn off a control output group. **DD = Control Output Group Number (01, 02, etc.)**
Output Group Pulse	0ABPDD00CC (CR-LF)	This is the command message to pulse a control output group (1-second on, 1-second off). **DD = Control Output Group Number (01, 02, etc.)**
Output Group Pulse for XX Minutes	0ABXDD00CC (CR-LF)	This is the command message to pulse a control output group (on and off continuously for the time programmed in field 1∗74 of the control panel. **DD = Control Output Group Number (01, 02, etc.)**
Output Group Pulse for YY Seconds	0ABYDD00CC (CR-LF)	This is the command message to pulse a control output group (on and off continuously for the time programmed in field 1∗75 of the control panel. **DD = Control Output Group Number (01, 02, etc.)**

Keypad Messages

The table below describes the typical commands used to request a keypad display and to send a keypad stroke sequence.

Keypad Messages

Action	String	Definition
Keypad Display Request	09KDP00CC (CR-LF)	The control panel will respond to this request with the Keypad Display for the specified partition **(P).**
Keypad Display Report	29kdDD…00CC (CR-LF)	The control panel sends this message in response to a Keypad Display Request. The data portion of this message (D) consists of the 32 characters currently being displayed on the keypad for the requested partition and one character indicating the LED state. The LED state character is the sum of current LED states expressed in ASCII characters 0-7, where: **1 = Ready; 2 = Trouble; 4 = Armed.** ***Note:*** The result of requesting the display from an unassigned partition is undefined.
Keypad Stroke Command	##KSPDDDDD00CC (CR-LF)	You can send a keypad stroke sequence, up to 5 keystrokes, using this command. The allowable keystroke characters are ASCII 0-9, 'A' for asterisk (*), 'B' for pound (#). **P = Partition Number and D = the keystroke.**

Event Log Messages

The table below describes the typical commands used to request and receive an event log dump.

Event Log Messages

Action	String	Definition
Event Log Dump Request	08LD00CC (CR-LF)	The control panel will respond to this request with an Event Log Dump Report. ***Note*:** This message should be sent only when an initial connection is made with the panel. It is not intended to be used as a "polling" command.
Event Log Report	1BldDD…00CC (CR-LF)	The control panel sends this message in response to an Event Log Dump Request. The data portion of this message (D) consists of the following format: **Ec Zne Usr P mm hh dd MM yy.** **Ec = Event Code** **Zne = Zone Number** **Usr = User Number** **P = Partition** **mm = Minute** **hh = Hour** **dd = Day** **MM = Month** **yy = Year.** After the last event log entry a "Log Complete" message is sent: **08lc00CC.** ***Note:*** The Response Header for the Event Log Report is ld (lower case L and lower case D). Refer to ***System Event Notification Messages*** later in this document for a list of Event Codes (Ec).

Zone List Messages

The table below describes the typical commands used to bypass and unbypass a group of zones in a zone list.

Zone List Messages

Action	String	Definition
Auto-Bypass Zone List	0AZBZL00CC (CR-LF)	This is the command message to bypass a group of zones in a zone list. **ZL = Zone List Number (01, 02, etc.).**
Auto-Unbypass Zone List	0AZUZL00CC (CR-LF)	This is the command message to unbypass a group of zones in a zone list. **ZL = Zone List Number (01, 02, etc.).**

Access Control Point Messages

Access Control Point messages can be sent for individual access control points, a group of access control points, or for access control points by partition. Access Control Point messages have the following limits:

- The range of access points values is 01-31 (two digits with a leading zero if needed)
- The range of group values is 01-08, (the leading zero is required)
- The range of partition values is 01-08, (the leading zero is required).

The tables that follow describe the typical commands used for individual, group and partition access control point messages.

Individual Access Control Point Messages

Note: **pt = Access Control Point Number (01-31).**

Action	String	Definition
Bypass an Access Point	0ADBpt00CC (CR-LF)	This is the command message to bypass an access point. ***Example*:** To bypass access point 01 send: 0ADB0100E6 (CR-LF)
Exit an Access Point	0ADEpt00CC (CR-LF)	This is the command message to exit an access point. ***Example*:** To exit access point 02 send: 0ADE0200E1 (CR-LF)
Lock an Access Point	0ADLBpt00CC (CR-LF)	This is the command message to lock an access point. ***Example*:** To exit access point 01 send: 0ADB0100DC (CR-LF)
Grant an Access Point with Override	0ADOBpt00CC (CR-LF)	This is the command message to grant an access point with override. ***Example*:** To grant an access point with override for point 03 send: 0ADB0300D6 (CR-LF)
Access Point Trigger On	0ADNpt00CC (CR-LF)	This is the command message to turn on the trigger for an access point. ***Example:*** To turn on the trigger for access point 03 send: 0ADB0300D4 (CR-LF)
Access Point Trigger Off	0ADFpt00CC (CR-LF)	This is the command message to turn off the trigger for an access point. ***Example:*** To turn off the trigger for access point 03 send: 0ADB0300E2 (CR-LF)
Grant an Access Point	0ADGpt00CC (CR-LF)	This is the command message to grant an access point. ***Example:*** To grant access point 01 send: 0ADB0100E0 (CR-LF)
Protect an Access Point	0ADPpt00CC (CR-LF)	This is the command message to protect an access point. ***Example:*** To protect access point 01 send: 0ADB0100D7 (CR-LF)

Access Control Point Messages by Group

Note: **gg = Access Control Group Number (01-08).**

Action	String	Definition
Bypass an Access Point Group	0AGBgg00CC (CR-LF)	This is the command message to bypass an access point group.
Exit an Access Point Group	0AGEgg00CC (CR-LF)	This is the command message to exit an access point group.
Lock an Access Point Group	0AGLBgg00CC (CR-LF)	This is the command message to lock an access point group.
Grant an Access Point Group with Override	0AGOBgg00CC (CR-LF)	This is the command message to grant an access point group with override.
Grant an Access Point Group	0AGGgg00CC (CR-LF)	This is the command message to grant an access point group.
Protect an Access Point Group	0AGPgg00CC (CR-LF)	This is the command message to protect an access point group.
Enable an Access Point Group	0AGNgg00CC (CR-LF)	This is the command message to enable an access point group.
Disable an Access Point Group	0AGFgg00CC (CR-LF)	This is the command message to disable an access point group.

Access Control Point Messages by Partition

Note: **pp = Access Control Partition Number (01-08).**

Action	String	Definition
Bypass Access Points by Partition	0APBpp00CC (CR-LF)	This is the command message to bypass access points by partition.
Exit Access Points by Partition	0APEpp00CC (CR-LF)	This is the command message to exit access points by partition.
Lock Access Points by Partition	0APLBpp00CC (CR-LF)	This is the command message to lock access points by partition.
Grant Access Points by Partition with Override	0APOBpp00CC (CR-LF)	This is the command message to grant access points by partition with override.
Grant Access Points by Partition	0APGpp00CC (CR-LF)	This is the command message to grant access points by partition.
Protect Access Points by Partition	0APPpp00CC (CR-LF)	This is the command message to protect access points by partition.

System Event Notification Messages

The control panel can be programmed (field ✳05) to send system event notification messages when certain events occur. The 12-character data field of this message is divided into six 2-character sub fields. A typical message is as follows: **1BnqDDD….00CC (CR-LF).** The data portion of this message (D) consists of the following format: **Ec Zne Usr P mm hh dd MM yy.**

Ec = Event Code
Zne = Zone Number
Usr = User Number
P = Partition ✳
mm = Minute
hh = Hour
dd = Day
MM = Month
yy = Year

✳ ***Note:*** **System events, such as, System Low Battery, and Test display partition "0".**

System Event Notification Messages are reported in real time, with the Hour and Minute reflecting the time of the transmission. The messages contain printable ASCII characters with the exception of the Terminator. The table below describes the different components of a System Event Notification Message.

System Event Codes (Ec)

Code	Description
01	Fire Alarm
02	Fire Alarm Restore
03	Trouble
04	Trouble Restore
05	Bypass
06	Bypass Restore
07	Close (Arm)
08	Open (Disarm)
0D	Manual Trigger Test Report
0E	Send a Power-Up Report
0F	Exit Error By User
11	Duress Alarm
12	Duress Restore
13	Telco Line 1 Trouble
14	Telco Line 1 Trouble Restore
15	Bell 1 Disable (Bypass)
16	Bell 1 Bypass Restore
17	Remote Close (Arm)
18	Remote Open (Open)
19	Pager Failed
1A	Pager Restore
1B	AC Loss Dialer Report
1C	AC Restore
1D	Periodic Test Report
1E	Exception Schedule Change

Code	Description
1F	Exit Error By Zone
21	Silent Alarm
22	Silent Alarm Restore
23	Telco Line 2 Trouble
24	Telco Line 2 Trouble Restore
25	Bell 2 Disable (Bypass)
26	Bell 2 Bypass Restore
27	Quick Arm (Close)
29	System Low Battery
2A	System Low Battery Restore
2B	Access Denial (General)
2C	ACS Module AC Loss
2D	Walk Test
2E	Access Schedule Change
2F	Fire Walk Test
31	Audible Alarm
32	Audible Alarm Restore
33	Earth Ground Trouble
34	Earth Ground Trouble Restore
35	Auxiliary Relay Disable (Bypass)
36	Auxiliary Relay Bypass Restore
37	Keyswitch Close (Arm)
38	Keyswitch Open (Disarm)
3B	Door Prop Open
3C	ACS Module Low Battery

Code	Description
3D	Walk Test Exit
3E	Send a Power-Up Report
3F	Fire Walk Test Exit
41	Perimeter Alarm
42	Perimeter Alarm Restore
43	Supervisory Alarm
44	Supervisory Alarm Restore
45	Dialer Disable (Bypass)
46	Dialer Bypass Restore
47	Partial Arm
48	Callback Requested
4B	Door Prop Open Restore
4C	Access Point Bypass
4D	Event Log 50 % Full
4E	Program Changed
51	Interior Alarm
52	Interior Alarm Restore
53	Expansion Module Tamper
54	Expansion Module Tamper Restore
55	Vent Zone Bypass
56	Vent Zone Bypass Restore
57	ACM Fail
58	ACM Fail Restore
59	Battery Test Fail
5A	Battery Test Fail Restore
5B	Access Granted
5C	ACS Module Reset
5D	Event Log 90 % Full
5E	Auto-Arm Fail
5F	Cancel By User
61	24 Hour Zone Alarm
62	24 Hour Zone Alarm Restore
63	Loss of RF Supervision
64	RF Supervision Restore
65	ACS Test Entry
66	ACS Test Exit
67	Auto-Arm
68	Auto Disarm
69	RF Jam Fail
6A	RF Jam Restore
6B	Egress Denied (General)
6C	Access Point Relay Supervision Fail
6D	Event Log Overwrite

Code	Description
6E	Off-Normal Report
6F	Fire Drill Begin
71	Day/Night Alarm
72	Day/Night Alarm Restore
73	RPM Supervision Trouble
74	RPM Supervision Trouble Restore
76	Engineer Reset
77	Dialer Shutdown Restore
78	Dialer Shutdown
79	System Shutdown
7A	System Shutdown Restore
7B	Door Forced Open
7C	ACS Module Self-Test Fail
7D	Event Log Reset
7E	Fire Point Tested OK
7F	Fire Drill End
81	Entry/Exit Alarm
82	Entry/Exit Alarm Restore
83	ACS Relay Supervision Trouble
84	ACS Relay Supervision Restore
85	UCS Fail
86	UCS Fail Restore
87	Log System Shutdown Restore
88	Log System Shutdown
89	RF Low Battery
8A	RF Low Battery Restore
8B	Door Forced Open Restore
8C	Access Point DSM Shunt
8D	Time Clock Reset
8E	Fire Point Not Tested
91	Polling Loop Short Alarm
92	Polling Loop Short Alarm Restore
93	Polling Loop Short Trouble
94	Polling Loop Short Trouble Restore
95	ACS Relay/Trigger Disable
96	ACS Relay/Trigger Enable
97	ACS Reader Disable
98	ACS Reader Enable
99	ACS Zone Alarm
9A	ACS Zone Alarm Restore
9B	Egress Granted
9C	Access Point DSM Unshunt
9D	Time Clock Error

Code	Description
9E	Recent Close By User
A1	RF Expansion Module Fail
A2	RF Expansion Module Fail Restore
A3	Expansion Module Fail
A4	Expansion Module Fail Restore
A5	ACS Zone Shunt
A6	ACS Zone Unshunt
A7	Access Point RTE Trouble
A8	Access Point RTE Trouble Restore
A9	Access Point DSM Trouble
AA	Access Point DSM Trouble Restore
AB	Access Point RTE Shunt
AC	Access Point RTE Unshunt
AD	Program Mode Entry
AE	Listen-In To Follow
B1	24 Hour Auxiliary Alarm
B2	24 Hour Auxiliary Alarm Restore
B3	Sensor Tamper
B4	Sensor Tamper Restore
B5	Cross Zone Trouble
B6	Cross Zone Trouble Restore
B7	Arm STAY
BB	ACS Program Entry
BC	ACS Module AC Restore
BD	Program Mode Exit
BE	Fire Point Tested Failed
C1	Smoke Alarm
C2	Smoke Alarm Restore
C3	Fire Trouble
C4	Fire Trouble Restore
C7	Fail To Close
C8	Fail To Open
C9	Hi Sensitivity Signal (Smoke)
CA	Hi Sensitivity Signal Restore (Smoke)
CB	ACS Program Exit

Code	Description
CC	ACS Module Low Battery Restore
CD	User Code Added
D1	Waterflow Alarm
D2	Waterflow Alarm Restore
D3	Fail To Communicate
D4	Communication Restore
D7	Late Close
D8	Late Open
D9	Low Sensitivity Signal
DA	Low Sensitivity Signal Restore
DB	ACS Threat Change
DC	ACS Point Unbypass
DD	User Code Deleted
E1	Fire Supervisory Alarm
E2	Fire Supervisory Alarm Restore
E3	Bell 1 Trouble
E4	Bell 1 Trouble Restore
E7	Early Close
E8	Early Open
E9	Hi Sensitivity Signal (PIR)
EA	Hi Sensitivity Signal Restore (PIR)
EB	Duress Access Grant
EC	Access Point Relay Supervision Restore
ED	User Code Changed
F3	Bell 2 Trouble
F4	Bell 2 Trouble Restore
F5	Faults
F6	Fault Restore
F9	Low Sensitivity Signal (PIR)
FA	Low Sensitivity Signal Restore (PIR)
FB	Duress Egress Grant
FC	ACS Self-Test Fail Restore
FD	Fail To Print
FE	Fail To Print Restore

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K9571-4 Rev A 02/06

Computer Interface Protocol 4

ADDED IN REVISION 3 OF THE PANEL

General

This document describes the electrical and protocol specifications for the Ademco RS-232 interface port to any PC to allow home control systems to obtain status information from the Ademco security panel on a real—time basis. In addition, limited control of hardware devices connecting to the Ademco panel will be allowed from home control systems. Any PC connected to the RS232 panel output can be used to communicate with the panel. Connection from the panel's RS232 output to the computer may be via a VA8201, Ademco's 4100SM Interface Module, or other appropriate RS232 H/W interface module available from Ademco. Any software capable of sending ASCII strings through a PC’s COM ports may be used.

Signaling Specifications

This application uses only GND and the TxD and RxD signals in a half-duplex fashion. The DSR signal is used by the VA8201 if it is installed. TxD and RxD are used in their normal context. The panel ignores all handshake lines when sending data so that connected equipment must be capable of receiving continuous 1200-baud data. The V8201 sets the computer's DSR signal false when communicating with the panel.

Communication settings should be 1200-baud, 8 data bits, no parity, and one stop bit. Logic levels at the computer interface are per standard RS-232.

Error Checking

This release does not contain any error detection and re-transmission protocols. It should only be used where the data link is 100% reliable.

Messages

With the exception of the message terminator, CR-LF, all characters are printable ASCII.

Packet Format
Data packets both from a PC to the panel and from the panel to a PC use the following format. ***Note:*** All hex values are entered in upper case only.

(CR-LF) NNMSD…00 CC (CR-LF)

Initiator
(CR-LF) Message initiator. ASCII characters consisting of hexadecimal 0x0D and 0x0A. This is sent at the start of a message to allow the Home Controller to recover from any noise or spurious signals sent.

Packet Length
NN 2 ASCII characters, length of packet including all characters but CR-LF at the end of the packet. Legal values are hex 00 to FF. Permissible characters are ASCII 0-9 and upper case A-F.

Message Type
M 1 ASCII character, message/packet type ID. These are upper and lower case alpha characters. The commands are case-sensitive, and must be entered with the case shown. Allowed values are a-z and A-Z.

Sub-Message Type
S ASCII character, sub-message/packet type. These are upper and lower case alpha characters. The commands are case-sensitive, and must be entered with the case shown. Allowed values are a-z and A-Z.

Data
D… 0 or more ASCII characters of data associated with the command/packet type. Any printable ASCII character is permitted.

Reserved
00 Two ASCII characters, reserved for future development. The only currently legal character is 0 (numeric zero).

Checksum
CC 2 ASCII characters, 2-digit checksum. This is the hexadecimal two's complement of the modulo-256 sum of the ASCII values of all characters in the message excluding the checksum itself and the CR-LF terminator at the end of the message. Permissible characters are ASCII 0-9 and upper case A-F.

Terminator
(CR-LF) Message terminator. ASCII characters consisting of hexadecimal 0x0D and 0x0A.

Control Messages

`08XN0092` "Communication On"
`08XF009A` "Communication Off"

During telephone line activity and while in programming mode, the panel will ignore any and all Home Control activity. This means that if the panel software is in the midst of sending a message, and the Central Station contacts it, the panel will stop transmitting to the Home Controller. Prior to this the panel will send the "Communication Off" message to the Home Controller to notify the Home Controller that the panel will not be communicating for an indeterminate period. When communication is again possible, the panel will transmit the "Communication On" message.

The "Communication On" message will also be sent when the panel powers up, or resets. `Also sent in between dialer attempts, and upon Comm Fail.`

The "Ready for Next" Message
`08OK009E`

This message is sent by the panel to indicate that it is ready for another command. It is *not* an indication of the validity of the previous command. It will be sent within 250 mSec. from the end of the last message's STOP bit.

Arm and Disarm Messages
You can use the PC to arm and disarm the panel and to query the panel's arming status. For Arm and Disarm messages the data field consists of the two-digit User Number[1] (01-32) followed by the 4-digit User Code (for RS-232 controlled panels *always* use 4-digit arm/disarm codes), followed by 8 ASCII digits indicating to which partitions the command should be applied. The partition numbers may be in any order.

You can use the PC to request the arming status of the system by sending an Arming Status Request. The Panel will respond with an Arming Status Report.

[1] User Numbers are no longer needed. Any two-digit number (i.e., "00") may be used to fill that location.

Arm to Away
`16AANNUUUUpppppppp00CC(CR-LF)`

Example:
To Arm-Away partitions 1,2,4,5, and 8 with User Code 1234, send:
16AA0112340124580000F8

Arm to Home (Stay)
`16AHNNUUUUpppppppp00CC(CR-LF)`

Example:
To Arm-Stay partitions 1,2,4,5, and 8 with User Code 1234, send:
16AH0112340124580000F1

Arm to Instant
`16AINNUUUUpppppppp00CC(CR-LF)`

Example:
To Arm-Instant partitions 1,2,4,5, and 8 with User Code 1234, send:
16AI0112340124580000F0

Arm to Max
`16AMNNUUUUpppppppp00CC(CR-LF)`

Example:
To Arm-Maximum partitions 1,2,4,5, and 8 with User Code 1234, send:
16AM0112340124580000EC

Disarm
`16ADNNUUUUpppppppp00CC(CR-LF)`

Example:
To Disarm partitions 1,2,4,5, and 8 with User Code 1234, send:
16AD0112340124580000F5

Force Arm to Away
`16FANNUUUUpppppppp00CC(CR-LF)`

Example:
To Force-Arm-Away partitions 1,2,4,5, and 8 with User Code 1234, send:
16FA0112340124580000F3

Force Arm to Home (Stay)
`16FHNNUUUUpppppppp00CC(CR-LF)`

Example:
To Force-Arm-Stay partitions 1,2,4,5, and 8 with User Code 1234, send:
16FH0112340124580000EC

Zone List Messages
These commands are used to bypass or unbypass a group of zones in a zone list. “ZL” is the zone list number (01, 02, etc.).

Auto-Bypass Zone List
`0AZBZL00CC(CR-LF)`

Example:
To Auto-bypass Zone List 01 send:
0AZB010032

Auto-Unbypass Zone List
`0AZUZL00CC(CR-LF)`

Example:
To Auto-unbypass Zone List 02 send:
0AZU02001E

Status Requests

Arming Status Request

`08as0064(CR-LF)`

The panel responds to this message with an Arming Status Report.

Arming Status Report

`10ASDDDDDDDD00CC(CR-LF)`

The panel sends this message in response to a Status Request

The 8-character data field represents the arming status of partitions 1-8. Each partition field can contain one of the following values:

- `A` Armed to Away
- `H` Armed to Home
- `D` Disarmed
- `N` Not Ready
- B Bypassed
- M Maximum
- I Instant

If partitioning is not used or not available, all 8 data fields will contain the same value. Fields for partitions not assigned to a User will display `'D.'`

*Exampl*e: With 6 partitions assigned, partitions 1-4 Armed to Home, partitions 5-6 not assigned, and partitions 7-8 Armed to Away, the message is

`10ASHHHHDDAA0081(CR-LF)`

Zone Status Messages
You can use your PC to query the panel concerning the status (open, closed, trouble, alarm, bypassed) of all zones, and to request the partition assignment of all zones. The panel will respond with a Zone Status or Zone Partition Status message for all zones, sent in blocks of 64 zones. In addition, the panel can be programmed to send System Notification Messages concerning zone status. *(See* Notification Messages, below.)

Zone Status Request
`08zs008B(CR-LF)`
The panel responds with a Zone Status Report.

Note: This message should be sent only when an initial connection is made with the panel. *It is not intended to be used as a 'polling' command*. The panel can be programmed to send System Notification Messages concerning zone status.

Zone Status Report
`49ZSMD...00CC(CR-LF)`
The panel sends this message in response to a Zone Status Request.
The data portion of this message is 65 characters long, with the first character indicating which block is being sent: 1, 2, 3 or 4. Message block 1 contains information pertaining to zones 1 - 64, message block 2 for zones 65 -128, message block 3 for zones 129 - 192 and message block 4 for zones 193 - 250.[2] The shorter length of the fourth data block will be reflected in the packet length bytes.

The rest of the data consists of one character for each zone in order. They will have values from 0-8, with 0 meaning no partition assignment.

Each character is the *sum* of all applicable status values, expressed in hexadecimal using ASCII characters 0-9 and A-F.

	Values
0	Closed
1	Open
2	Trouble
4	Alarm
8	Bypassed

[2] Message blocks 3 & 4 are used only for the Vista-250 type panels. Vista-128 type panels will only send the first two message blocks.

*Exampl*e: a Zone Status Report for a system in which Zone 1 is Open, Zone 2 is Open, in Trouble, and Bypassed, and the rest Closed, would begin `49ZS1B00`…

Zone Partition Request

`08ZP008E(CR-LF)`
Panel responds with a Zone Partition Report

*Not*e: This message should be sent only when an initial connection is made with the panel. *It is not intended to be used as a 'polling' command*.

Zone Partition Report

`49ZPMD...00CC(CR-LF)`
The panel sends this message in response to a Zone Partition Request.
The data portion of this message is 65 characters long, with the first character indicating which block is being sent: 1, 2, 3 or 4. Message block 1 contains information pertaining to zones 1 - 64, message block 2 for zones 65 -128, message block 3 for zones 129 - 192 and message block 4 for zones 193 - 250.[3] The shorter length of the fourth data block will be reflected in the packet length bytes.

The rest of the data consists of one character for each zone in order. They will have values from 0-8, with 0 meaning no partition assignment.

*Exampl*e: a Zone Partition Report for a system in which Zone 1 is assigned to Partition 2. Zone 2 is assigned to no partition, and Zone 3 is assigned to Partition 8, would begin 49`ZP1208`…

Zone Descriptor Request

`08ZD009A(CR-LF)`
Panel responds with a Zone Descriptor Report

*Not*e: This message should be sent only when an initial connection is made with the panel. *It is not intended to be used as a 'polling' command*.

Zone Descriptor Report

[3] Message blocks 3 & 4 are used only for the Vista-250 type panels. Vista-128 type panels will only send the first two message blocks.

##zdzzz"[String]"00CC(CR-LF)
The panel sends this message in response to a Zone Descriptor Request.
The data portion of this message consists of the Zone Number (zzz), followed by a quote (ASCII 0x22), followed by the characters in the Zone Descriptor, followed by another quote (ASCII 0x22). Because the length of the Zone Descriptors is indeterminate, the bytes-to-follow (here "##") are also indeterminate. There will be one descriptor sent per message packet, with multiple packets sent until all descriptors have been transmitted. No message will be sent for zones that are not described. After the last zone descriptor is sent an "end of descriptors" message will be sent:

0DZD000""00BA(CR-LF)

Event Log Dump Request
08LD00A8(CR-LF)
Panel responds with an Event Log Dump Report

*Not*e: This message should be sent only when an initial connection is made with the panel. *It is not intended to be used as a 'polling' command*.

Event Log Dump Report
1Blddddd…00CC(CR-LF)
The panel sends this message in response to an Event Log Dump Request. The data (ddd) will follow the format given for the System Event Notification Messages:

Ec Zne Usr P mm hh dd MM yy

Where:

- Ec = Event Code
- Zne = Zone number
- Usr = User Number
- P = Partition number
- mm = Minute
- hh = Hour
- dd = Date
- MM = Month
- yy = Year

After the last log entry is sent a "log complete" message will be sent:

08lc0069(CR-LF)

Control Channel Status Request
0ACS0099(CR-LF)
The panel will respond with a Control Channel Status Report for all 96 control channels.

Control Channel Status Report
68CSD...00CC(CR-LF)
The panel sends this message in response to a Control Channel Status Request. The data portion of this message is 96 characters long, one character for each control channel in order. The value will be U (Unprogrammed), 0 (Off), or 1 (On).

*Exampl*e: With control channel 1 Off, channel 2 On, channel 3 Unprogrammed, and channel 4 Off, the message would begin 68CS01U0....

Access Point Messages

Access point messages have the following limits:
The range of access point values is 01- 31 – two digits, with a leading zero if needed.
The range of group values is 01 – 08, with a leading zero required.
The range of partition values is 01 – 08, with a leading zero required.

Adding and Deleting Cards and Users

Add a Card

18CAfffrrccccccuuuu00CC(CR-LF)

Where:

fff is the Facility Code
rr is the RCM number
ccccccc is the Card Code
uuuu is the User Code

All numbers are sent MSB-first.

Delete a Card

18CDfffrrccccccuuuu00CC(CR-LF)

Where:

fff is the Facility Code
rr is the RCM number
ccccccc is the Card Code
uuuu is the User Code

All numbers are sent MSB-first.

Add a User

17UAiiiccccaaaaaaaa00CC(CR-LF)

Where:

iii is the User Index
cccc is the User Code
aaaaaaaa is the User's Authority Level by partition Pttn 1 first)

All numbers are sent MSB-first.

Delete a User

09iii00CC(CR-LF)

Where:

iii is the User Index

All numbers are sent MSB-first.

Commands for Individual Access Points

Bypass An Access Point

0ADBpt00CC(CR-LF)

Example:

To bypass Access point 01 send:

0ADB010048

Exit An Access Point
0ADEpt00CC(CR-LF)

Example:
To Exit Access point 02 send:
0ADE010045

Lock An Access Point
0ADLpt00CC(CR-LF)

Example:
To Lock Access point 01 send:
0ADL01003E

Grant an Access Point with Override
0ADOpt00CC(CR-LF)

Example:
To Grant-with-Override Access point 03 send:
0ADO030039

Access Point Trigger On
0ADNpt00CC(CR-LF)

Example:
To turn on the trigger for Access point 03 send:
0ADN03003A

Access Point Trigger Off
0ADFpt00CC(CR-LF)

Example:
To turn off the trigger for Access point 03 send:
0ADF010044

Grant An Access Point
0ADGpt00CC(CR-LF)

Example:

To Grant Access point 01 send:
0ADG010043

Protect An Access Point
0ADPpt00CC(CR-LF)

Example:
To Protect Access point 01 send:
0ADP01003A

Commands for Group Access Points

Bypass Access Point by Group
0AGBgg00CC(CR-LF)

Exit Access Point by Group
0AGEgg00CC(CR-LF)

Lock Access Point by Group
0AGLgg00CC(CR-LF)

Override Access Point by Group
0AGOgg00CC(CR-LF)

Grant Access Point by Group
0AGGgg00CC(CR-LF)

Protect Access Point by Group
0AGPgg00CC(CR-LF)

Enable Access Point by Group
0AGNgg00CC(CR-LF)

Disable Access Point by Group
0AGFgg00CC(CR-LF)

Commands for Access Points by Partition

Bypass Access Point by Partition
0APBpp00CC(CR-LF)

Exit Access Point by Partition
0APEpp00CC(CR-LF)

Lock Access Point by Partition
0APLpp00CC(CR-LF)

Grant Access Point by Partition with Override
0APOpp00CC(CR-LF)
Grant Access Point by Partition
0APGpp00CC(CR-LF)

Protect Access Point by Partition
0APPpp00CC(CR-LF)

Control Channel (Relay, X-10, FSA) Messages

You can use your PC to send an on or off command to a control channel. The control channel programming determines which outputs are controlled and what action occurs. The data portion of the channel on and off commands is a 2-digit, 1-referenced decimal number corresponding to the number of the desired control channel or group number. Duration of the pulse commands is set when the panel is programmed.

You can also query the panel concerning control channel status with a Control Channel Status Request. The panel will respond with a Control Channel Status Report.

Control Channel On
0ACNDD00CC(CR-LF)

Control Channel Off
0ACFDD00CC(CR-LF)

Control Channel On for 2 Seconds
0ACP0100CC(CR-LF)

Control Channel On for XX Minutes
0ACXDD00CC(CR-LF)

Control Channel On for YY Seconds
0ACYDD00CC(CR-LF)

Control Channel Group On
0ABNDD00CC(CR-LF)

Control Channel Group Off
0ABFDD00CC(CR-LF)

Control Channel Group Pulse
0ABPDD00CC(CR-LF)

Control Channel Group Pulse for XX Minutes
0ABXDD00CC(CR-LF)

Control Channel Group Pulse for XX Minutes
0ABYDD00CC(CR-LF)

Display Messages
You can request the panel concerning the message currently being displayed for a partition using the Display Request. The panel will respond with a Display Report.

Display Changed Notification
`10DCPPPPPPPP00CS`

This notice is sent *by the panel* whenever a keypad display changes. “P” indicates in which partition the keypad display has changed. It is up to the Home Controller to get the information for any pertinent partitions, using the Keypad Display Request.

Keypad Display Request
`09KDP00CC(CR-LF)`
Where P is the partition number wanted. Note that there must be at least one keypad programmed for that partition.

Keypad Display Response
`28kddd…00CC(CR-LF)`
The data portion consists of the 32 bytes currently being displayed in the requested partition, and one byte indicating the LED state. The result of requesting the display contents for an unassigned partition is undefined. The seventh bit (MSB) of the first byte will be set to indicate the display's backlight should be turned on. This should be removed to give the proper ASCII value.

The LED state byte is the *sum* of all current LED states, expressed in hexadecimal using ASCII characters 0-9 and A-F.

Values	Meaning
1	Ready
2	Trouble
4	Armed

Home control CANNOT be active while programming from the keypad.

Keypads are updated once every 7 seconds, so trying to poll them any faster is a waste of bandwidth, and could slow the system deleteriously.

How to tell when the "*** ALL SECURE **" message is displayed:
The System Event Notification message is sent when the system is armed; however, when there is an exit delay, there will be a period when a "You May Exit Now" message is displayed, before the "*** ALL SECURE **" message is seen. This Exit Delay is programmed by the installer, and is in 15-second increments, with a maximum of 225 (15*15) seconds. To find when the "*** ALL SECURE **" message is displayed, poll the keypad every 15 seconds for up to 225 seconds.

When the homeowner's command coincides with a system event notification, it is ignored (no 'OK' message received).

Key Stroke Message

You can send a series of up to 5 keystrokes to the panel using the Key Stroke Command. Commands greater than 5 keystrokes can be sent one key at a time, *provided no more than 5 seconds elapses between reception of each keystroke.*[4]

Key Stroke Command

`##KSPd…00CC(CR-LF)`

Where P is the partition number wanted, followed by keystrokes. Allowable characters are ASCII 0-9,'A' for asterisk, 'B' for pound ('#'). To send panic-key combinations, send 'C' for '1' + '*'; 'D' for '*' + '#'; and 'E" for '3' + '#'. These key combinations are shared with the Macro keys: Macro Key A, when unprogrammed, sends a 'C', Macro Key B, when unprogrammed, sends a 'D', Macro Key C, when unprogrammed, sends an 'E'.

You need to have a keypad assigned to a partition to get keypad text from that partition

[4] For security purposes, the panels' keystroke processor resets if more than 5 seconds elapse between keystrokes.

Notification Messages
The panel can be programmed to send notification messages through the RS-232 port when events occur.

System Event Notifications

1B nq Ec Zne Usr P mm hh dd MM yy 00 CS (CR-LF)

Where:

- 1B = Byte count in hex.
- nq = Response header
- Ec = Event Code
- Zne = Zone number
- Usr = User Number
- P = Partition number*
- mm = Minute†
- hh = Hour†
- dd = Date
- MM = Month
- yy = Year
- 00 = End-of-Data Marker
- CS = Checksum

* System events, such as System Low Battery or Test, display partition ‘0’.
† System Notification Messages are reported in real time, with the Hour and Minute reflecting the time of transmission.

[16] messages are duplicates

Event Code	Description & CID code	Event Type
01	Fire Alarm 110	Alarm
02	Fire Alarm Restore 110	Alarm
03	Trouble 380	Trouble
04	Trouble Restore380	Trouble
05	Bypass 570	Bypass
06	Bypass Restore 570	Bypass
07	Close (Arm) 401	Open/Close
08	Open (Disarm) 401	Open/Close
0D	Man.Trigger Test Report 601	System
0E	Send A Power-up Report 305	System
0F	Exit Error By User (457)	Alarm
11	Duress 121	Alarm
12	Duress Restore 121	Alarm
13	Telco Line 1 Trouble 351 (Fire)	Trouble
14	Telco Line 1 Trb Rest 351 (Fire)	Trouble
15	Bell 1 Disable (Bypass) 521 (Fire)	Bypass
16	Bell 1 Bypass Rest 521 (Fire)	Bypass
17	Remote Close (Arm) 407	Open/Close
18	Remote Open (Disarm) 407	Open/Close
19	Pager Failed 336	System
1A	Pager Restore 336	System
1B	A.C. Loss 301	System
1C	A.C. Restore 301	System
1D	Periodic Test Report 602	System
1E	Except Skd Chg (631)	System
1F	Exit Error By Zone (374)	Alarm
21	Silent 122	Alarm
22	Silent Restore 122	Alarm
23	Telco Line 2 Trouble 352 (Fire)	Trouble
24	Telco Line 2 Trb Rest 352 (Fire)	Trouble
25	Bell 2 Disable (Bypass) 522 (Fire)	Bypass
26	Bell 2 Bypass Rest 522 (Fire)	Bypass
27	Quick Arm (Close) 408	Open/Close
29	Low Batt 302	System
2A	Low Batt Restore 302	System
2B	Access Denial(General) 421	Open/Close
2C	A.C. loss at A.C.S. module 342	Trouble
2D	Walk test 607	System
2E	Access Skd Chg (632)	System

31	Audible 123	Alarm
32	Audible Restore123	Alarm
33	Earth Ground Trouble 310 (Fire)	Trouble
34	Earth Ground Trb Rest 310 (Fire)	Trouble
35	Aux Rly Disable (Bypass) 524 (Fire)	Bypass
36	Aux Rly Bypass Rest 524 (Fire)	Bypass
37	Keyswitch Close (Arm) 409	Open/Close
38	Keyswitch Open (Disarm) 409	Open/Close
3B	Door Prop Open 426	Trouble
3C	Low Battery At A.C.S. Module 338	Trouble
3D	Walk Test Exit 607	System
3E	Send A Power-up Report 305	System
3F	Fire Walk Test Exit 604 (Fire)	Test
41	Perimeter 131	Alarm
42	Perimeter 131	Alarm
43	Zone/Sensor Supv Al 200 (Fire)	Trouble
44	Zone/Sensor Supv Al Rest 200 (Fire)	Trouble
45	Dialer Disable (Bypass) 551 (Fire)	Bypass
46	Dialer Bypass Rest 551 (Fire)	Bypass
47	Partial Arm (Close) (456)	Open/Close
48	Callback Requ. 411	System
4B	Door Prop Open Restore 426	Trouble
4C	Access Point Bypass 577	Bypass
4D	Event Log 50% Full 622	All
4E	Program Changed 306	All
51	Interior 132	Alarm
52	Interior 132	Alarm
53	Exp. Module Tamper 341	Trouble
54	Exp. Module Tamper Restore 341	Trouble
55	Vent Zone (Bypass) 579	Bypass
56	Vent Zone Bypass Rest 579	Bypass
59	Battery Test Fail 309	System
5A	Battery Test Restore 309 (Fire)	System
5B	Access Granted 422	Open/Close
5C	Reset At Module 339	All
5D	Event Log 90% Full 623	All
5E	Auto-arm Fail (455)	Open/Close
5F	Send A Cancel Trigger 406	Alarm

61	24 Hour Zone 133	Alarm
62	Hour 133	Alarm
63	R.F. Sensor Super 381	Trouble
64	R.F. Sensor Super Restore 381	Trouble
65	A.C.S. Test Entry 607	System
66	A.C.S. Test Exit 607	Open/Close
67	Auto Close (Arm) 403	Open/Close
68	Auto Open (Disarm) 403	Trouble
69	Expander Module Fail 344	Trouble
6A	Expander Module Fail 344	Open/Close
6B	Egress Denied(General) 424	Trouble
6C	Access Point Relay Supervision Fail 432	All
6D	Event Log Overwrite 624	System
6E	Off Normal Report (608)	System
6F	Begin Drill (Fire)	Test
71	Day/Nite Alarm 135	Alarm
72	Day/Nite Alarm Restore 135	Alarm
73	Rpm Sensor Super 382	Trouble
74	Rpm Sensor Super Restore 382	Trouble
76	Engineer Reset 313	All
77	Log Dialer Shutdown Rest 415	System
78	Log Dialer Shutdown 415	System
79	System Shutdown 308	All
7A	System Shutdown Restore 308	All
7B	Door Forced Open 423	Alarm
7C	Self Test Fail At Module 343	Trouble
7D	Event Log Reset 621	All
7E	Point Tested Ok (611)	System (Burg)
7E	Point Tested Ok (611)	Test (Fire)
7F	End Drill (Fire)	Test
81	Entry/Exit Alarm 134	Alarm
82	Entry/Exit Alarm Restore 134	Alarm
83	E.C.P. Relay Trouble 320	Trouble
84	E.C.P. Relay Trouble Restore 320	Trouble
87	Log System Shutdown Rest 414	System
88	Log System Shutdown 414	System
89	R.F. Low Batt 384	Trouble
8A	R.F. Low Bat Restore 384	Trouble
8B	Door Forced Open Restore 423	Alarm
8C	Access Point D.S.M. Shunt 434	Bypass
8D	Time Clock Reset 625	All
8E	Point Not Tested (612) (Burg)	System
8E	Point Not Tested (612) (Fire)	Test
91	Poll Loop Short 142	Alarm
92	Poll Loop Short Restore 142	Alarm
93	Polling Loop Short 332	Trouble

94	Polling Loop Short Restore 332	Trouble
95	A.C.S. Relay/Trigger Disable 520	Bypass
96	A.C.S. Relay/Trigger Enable 520	Bypass
97	A.C.S. Reader Disable 501	Bypass
98	A.C.S. Reader Enable 501	Bypass
99	A.C.S. Zone Alarm 140	Alarm
9A	A.C.S. Zone Alarm Restore 140	Alarm
9B	Egress Granted 425	Open/Close
9C	Access Point D.S.M. Unshunt 434	Bypass
9D	Time Clock Wrong 626	All
9E	Recent Close By User (459)	Alarm
A1	Expander Module Fail 143	Alarm
A2	Expander Module Fail Restore 143	Alarm
A3	Expander Module Fail 333	Trouble
A4	Expander Module Fail Restore 333	Trouble
A5	A.C.S. Zone Shunt 576	Bypass
A6	A.C.S. Zone Unshunt 576	Bypass
A7	Access Point R.T.E. Trouble 428	Trouble
A8	Access Point R.T.E. Trouble Restore 428	Trouble
A9	Access Point D.S.M. Trouble 427	Trouble
AA	Access Point D.S.M. Trouble Restore 427	Trouble
AB	Access Point R.T.E. Shunt 433	Bypass
AC	Access Point R.T.E. Unshunt 433	Bypass
AD	Log Pgm Mode Entry 627	System
AE	Listen-in To Follow 606	Alarm
B1	Non-burg Alarm 150	Alarm
B2	Non-burg Alarm Restore 150	Alarm
B3	Sensor Tamper 383	Trouble
B4	Sensor Tamper Restore 383	Trouble
B5	Cross-zoning Trouble 378	Trouble
B6	Cross-zoning Trouble Restore 378	Trouble
B7	Arm Stay 441 (Close)	Open/Close
BB	A.C.S. Program Entry 429	All
BC	A.C. Loss Restored At A.C.S. Module 342	Trouble
BD	Pgm Mode Exited 628	System
BE	Point Tested Failed (389)	Trouble

C1	Smoke Alarm 111	Alarm
C2	Smoke Alarm Rest 111 (Fire)	Alarm
C3	Fire Trouble 373	Trouble
C4	Fire Trouble Restore 373	Trouble
C7	Fail To Close (Arm) (454)	Open/Close
C8	Fail To Open (Disarm) (453)	Open/Close
C9	Smoke Detector Hi Sensitivity 385	Trouble
CA	Smoke Detector Hi Sensitivity 385	Trouble
CB	A.C.S. Program Exit 430	All
CC	Low Battery Restored At A.C.S. Module 338	Trouble
CD	User Code Added 999	System
D1	Water Flow Alarm 113 (Fire)	Alarm
D2	Water Flow Alarm Restore 113 (Fire)	Alarm
D3	Fail To Communicate 354	All
D4	Comm. Restore 354	All
D7	Late Close (Arm) (452)	Open/Close
D8	Late Open (452)	Open/Close
D9	Smoke Detector Lo Sensitivity 386	Trouble
DA	Smoke Detector Lo Sensitivity Restore 386	Trouble
DB	A.C.S. Threat Change 431	All
DC	Access Point Unbypass 577	Bypass
DD	User Code Deleted	System
E1	Zone/Sensor Supv Al 200 (Fire)	Alarm
E2	Zone/Sensor Supv Al Rest 200 (Fire)	Alarm
E3	Bell 1 Trouble 321 (Fire)	Trouble
E4	Bell 1 Trbrest 321 (Fire)	All
E7	Early Close (Arm) (451)	Open/Close
E8	Early Open (451)	Open/Close
E9	Intrusion Det. Hi Sensitivity 387	Trouble
EA	Intrusion Det. Hi Sensitivity 387	Trouble
EB	Duress Access Grant 124	Alarm
EC	Access Point Relay Suprv Restored 432	Trouble
ED	User Code Changed	System
F3	Bell 2 Trouble 322 (Fire)	Trouble
F4	Bell 2 Trb Rest 322 (Fire)	All
F5	Faults	All
F6	Fault Restores	All
F9	P.I.R. Detector Lo Sensitivity 388	Trouble
FA	Intrusion Det. Low Sensitivity 388	Trouble
FB	Duress Egress Grant 125	Alarm
FC	Selftest Restored At A.C.S. Module 343	Trouble
FD	Fail To Print 336	All
FE	Fail To Print Restore 336	All

Appendix A: C Source for Command String Generator

```
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
#include <string.h>

void main( )
{
  char inString[255],outString[261], buffer[3] ;
  unsigned char checkSum;
  int i;

      printf("Enter a command string: \n");
      gets(inString);
      //blank input quits program
      while (strlen(inString) )
      {
            checkSum = 0;
            //get length of input string
            sprintf(outString,"%02X",strlen(inString)+ 6);
            //insert length at beginning of dstring
            strcat(outString, inString);
            //put '00' spacers at end of string
            strcat(outString, "00");
            i = 0;
            //sum ascii values of characters in expanded string
            while (outString[i])
            {
                  checkSum += outString[i++];
            }

            //two's complement
            checkSum = ~(checksum) + 1;
            sprintf(buffer,"%02X",checkSum);
            //append to string
            strcat(outString,buffer);
            printf("%s\n", outString);
            printf("Enter a command string: \n");
            gets(inString);
      }
      exit(0);
}
```

As an example of using this code, to get the checksum for the Arm -Away command, user 01, user code 1234, you would enter the string "aa011234" followed by the ENTER key. The program should return "0Eaa011234003E." To quit the program, just press ENTER at the prompt.